

REMARKS

Receipt of the office action mailed August 13, 2009 is acknowledged. Claims 1-26 are pending in the application. Claims 1-3, 5, 6, 11, 14, 19-21, 23, 24, and 26 are rejected under 35 U.S.C. §102(e) as being anticipated by Adams (U.S. Patent No. 7,177,437). Claims 4, 15, and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Adams in view of Smythe (U.S. Patent No. 1,871,243). Claims 7-10, 12, 13, 16-18, and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams in view of Daniel (U.S. Patent No. 3,957,134). In keeping with the foregoing amendments and the following argument, reconsideration of the rejected claims is respectfully requested.

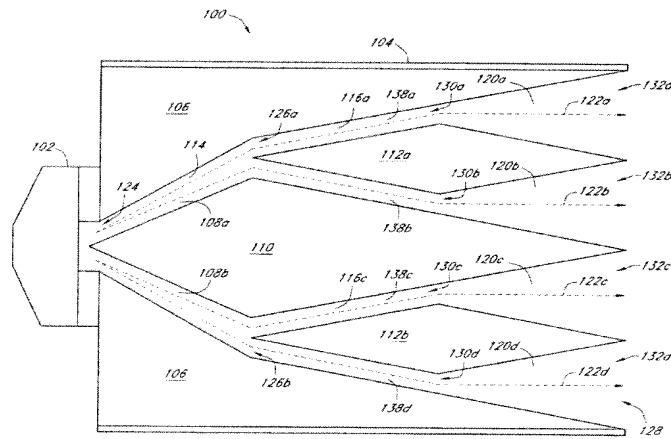
Claims 1, 23, and 26 are amended, claims 2 and 15 are canceled, and claims 27 and 28 are new. Support for the amendments to claims 1, 23, and 26, and new claims 27 and 28 may be found in the specification and claims as originally filed. For example, support may be found at least in Figs. 10(b), 11, 12, and 13(a), and at pages 24-27. No new matter is added.

No fees are believed due for new claims 27 and 28 as the total number of pending claims remains unchanged at 26 claims, and the application includes only three independent claims.

35 U.S.C. § 102 Rejections

Applicants respectfully traverse the rejection of claims 1-3, 5, 6, 11, 14, 19-21, 23, 24, and 26 as anticipated by Adams. Adams fails to disclose each claim limitation. Thus, Adams cannot anticipate any of the pending claims.

Each of the pending claims recites a sound wave guide structure (or a sound wave guide device) comprising, in part, a first sound wave path that is divided into a first substantially linear branch and a second curved branch, the second curved branch having a length substantially similar to the first linear branch. Adams discloses only straight branches. In particular, Adams discloses a multiple path acoustic horn. The horn includes an input aperture 124 and an exit aperture 128 as seen in Fig. 1A of Adams reproduced below:



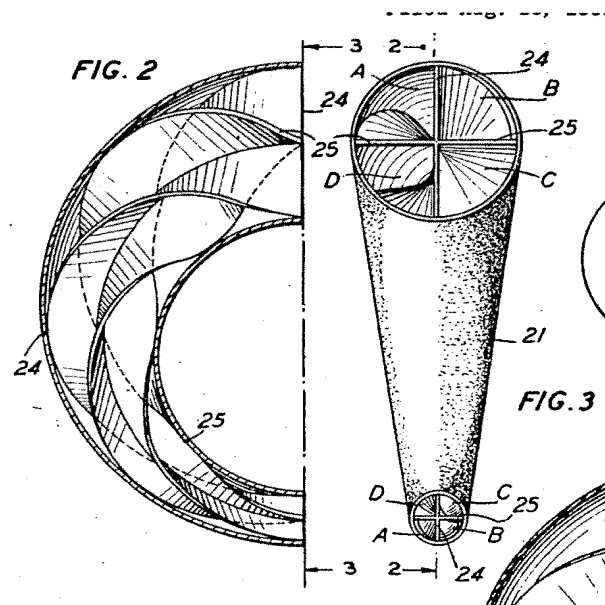
The horn shaped cavity 114 is divided up into conduits 108a and 108b by a plug 110. More conduits are formed by plugs 112a and 112b. However, all of the conduits are linear in shape. Moreover, Adams teaches that the conduits should be “symmetric” in order to efficiently split sound waves traveling through the conduits. See Adams col. 8, line 67 to col. 9, line 1. Adams fails to disclose any curved conduits. Thus, Adams cannot anticipate any of the pending claims. Applicants respectfully request withdrawal of the rejection of claims 1-3, 5, 6, 11, 14, 19-21, 23, 24, and 26.

35 U.S.C. § 103 Rejections

The cited art fail to disclose or suggest all claim limitations

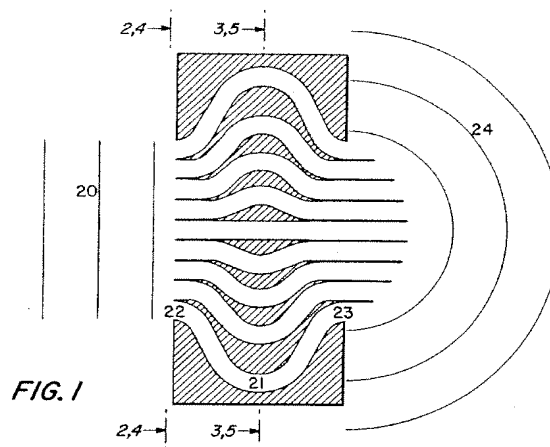
Applicants respectfully traverse the rejection of claims 4, 7-10, 12, 13, 15-18, 22, and 25 as obvious over Adams in view of Smythe or Daniel. As discussed above, Adams fails to disclose a first sound wave path that is divided into a first substantially linear branch and a second curved branch. Smythe and Daniel both fail to cure the deficiency of Adams.

Smythe and Daniel disclose only individual curved passages that do not split into other passages. Smythe discloses an acoustic device including a sound conduit for use in horns and sound transmitting equipment. Smythe discloses “a plurality of spiral shaped passages A, B, C, and D, shown in Figs. 2 and 3 of Smythe reproduced below:



The conduits A-D are curved by virtue of the curved bend 21 in the horn. However, the conduits A-D do not branch into other conduits.

Daniel discloses an acoustic refractor having passages of different shapes. Daniel discloses a plurality of sound passages 21 having staggered exits 23 as shown in Fig. 1 of Daniel reproduced below:



However, Daniel discloses only individual passages that do not branch into other passages. Moreover, Daniel teaches that the individual passages have different lengths in order to delay the sound waves so that the sound waves are “refracted into curved waves 24 upon emergence.” See Daniel col. 2, lines 55-57.

As discussed above, neither Smythe nor Daniel disclose or suggest passages (or conduits) that branch into other passages (or conduits). Thus, Smythe and Daniel cannot disclose or suggest a sound wave guide path that branches into a straight passage and a curved passage that have substantially the same length between branch points, as is recited by each of claims 4, 7-10, 12, 13, 15-18, 22, and 25. For this reason, Applicants respectfully request withdrawal of the rejection of claims 4, 7-10, 12, 13, 15-18, 22, and 25.

The alleged motivation to combine the teachings of Smythe and Adams is improper

According to the official action, the alleged motivation to modify Adams with the curved conduits of Smythe is to enhance the quality of the reproduced sound in the higher frequencies. However, Smythe teaches that the curved conduits improve the sound quality of high frequencies in the horn because the sound waves must travel a bent path around the bend in the horn. Thus, the sound waves in the traditional horn follow paths of different lengths. This results in distortion of high frequency sounds. It is not simply the curved conduit that improves the sound quality of high frequency sounds, rather, the curved conduit corrects distortion of high frequency sounds present in the horn due to the curved horn portion 21. Such a problem does not exist in Adams. As shown above, Adams teaches straight sound pathways and each of the pathways has a substantially similar path length. See Adams, col. 8, lines 55-57. Thus, the problem solved by Smythe (i.e., sound waves traveling different distances around the curved portion of a horn and thus becoming distorted at high frequencies) does not exist in Adams. As a result, one of ordinary skill in the art would not make the alleged modification to Adams and thus, the alleged motivation to combine the teachings of Adams and Smythe is flawed. For this additional reason, Applicants respectfully request withdrawal of the rejection of claims 4, 15, and 22.

Any prima facie showing of obviousness is rebutted by evidence of superior results

Applicants respectfully submit that the official action fails to establish a *prima facie* showing of obviousness, as set forth above. However, should the official action be found to have established a *prima facie* showing of obviousness, the *prima facie* showing is rebutted by the evidence of superior results set forth below.

Applicants respectfully submit that the claimed sound wave guide structure has superior operating characteristics over Adams. In particular, Applicants have found that a multiple aperture diffraction device having only straight conduits, like the device disclosed by Adams, results in non-coherent sound waves at an exit of the device. See the Affidavit of Hiroshi Kubota, at paragraph 6, which is found in appendix A. Applicants believe that this non-coherent sound is due to the reflection of sound waves between the conduits in the areas of the branch points. See the Affidavit of Hiroshi Kubota, at paragraph 7. More specifically, the conduits of the Adams device branch sharply from one another, thereby magnifying reflected sound waves between branches. See the Affidavit of Hiroshi Kubota, at paragraph 7. Thus, the Adams device does not have coherent sound waves at the device exit. See the Affidavit of Hiroshi Kubota, at paragraph 6.

The claimed sound wave guide structure, on the other hand, results in a coherent sound wave at the exit of the sound wave guide structure. In particular, the claimed curved branch allows the path to branch at a relatively low angle. See the Affidavit of Hiroshi Kubota, at paragraph 10. By branching the path at low angles, unwanted reflection of sound waves can be avoided. See the Affidavit of Hiroshi Kubota, at paragraph 10. However, when branching paths at low angles, the linear branched paths will result in different path lengths. To solve this additional problem, the claimed sound wave guide structure employs a curved path to match the length of the straight path. See the Affidavit of Hiroshi Kubota, at paragraph 10. The result of the claimed structure is a coherent sound wave exiting the claimed sound wave guide structure. See the Affidavit of Hiroshi Kubota, at paragraph 10.

Because the claimed sound wave guide structure has superior results when compared to the Adams device, any *prima facie* case of obviousness is effectively rebutted. For this additional reason, Applicants respectfully request withdrawal of the rejection of the pending claims.

Conclusion

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

A petition for a two month extension of time and the required fee is included with this paper.

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Respectfully submitted,

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